DoD Systems Engineering and CMMI

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USD(AT&L) Imperatives

- “Provide a context within which I can make decisions about individual programs.”
- “Achieve credibility and effectiveness in the acquisition and logistics support processes.”
- “Help drive good systems engineering practice back into the way we do business.”

How Defense Systems is Responding

- Instituted a new Systems and Mission Integration organization
  - Engaging OSD, Joint Staff, Services, and COCOM staffs to define joint integrated architectures
  - Synchronizing the requirements, acquisition, and budget processes
- Warfare offices tailoring the application of DoD 5000
  - Leading IPT process for program oversight and review
  - Role is to help programs succeed
- Formed a new Systems Engineering organization
  - Institutionalizing Systems Engineering across DoD
  - Setting policy for implementation, capturing best practices, setting standards for training and education
  - Enhancing emphasis on system assessment and support

What We Have Done To Promote Systems Engineering

- Issued Department-wide SE policy and provided implementation guidance
- Established SE Forum to ensure senior-level focus
- Instituted “context” briefings as part of Milestone Reviews
- Instituted system-level assessments as an aid to Program Managers
- Working with Defense Acquisition University to revise curricula
- Re-focused Warfare offices to help guide programs through the Milestone Review process

What We Have Done To Promote Systems Engineering (Cont'd)

- Emphasizing need for earlier test and evaluation involvement in the acquisition process
- Initiated needed improvements in modeling and simulation to account for family- and system-of-systems acquisition
- Leading the Defense Safety Oversight Council's acquisition panel; ensuring systems safety is integrated in design
- Leveraged close working relationships with industry (e.g., NDIA, GEIA, INCOSE, AIA, LAI) and academia (e.g., Stevens Institute of Technology, AFIT, NPGS, West Point, SMU)

CMMI Vision

The initial vision for CMMI was to integrate the competing maturity models and provide more consistent process improvement

- Cause integration of the functional disciplines within organizations and across programs
- Increase systems engineering process maturity as organizations migrate from the sun-setting CMMs to CMMI

Build on and improve the significant work done on CMM-like models

Have we lost sight of the goal?

- The end goal of CMMI is to provide a model for continuous process improvement, to achieve:
  - Reduced cycle times
  - Meeting cost & schedule targets
  - Improve quality

When achieving a level replaces the focus on continuous improvement, we've lost sight of the goal

How we got where we are

- CMMI Sponsors opted to pursue staged and continuous models to preserve legacy
  - SW-CMM, staged
  - SECM, continuous

We created “level-mania” instead of continuous improvement

Negative Effects of “Levels”

- Organizations often focus on maturity levels vice continuous improvement
- Organizations are tempted to view CMMI Level X as an “end” rather than a “means to the end”
- Some organizations may stop at Level “X” because that is all that is required or expected

Negative Effects of "Levels" 2

- Level "X" companies often do not perform at that level on all programs
  - Not all programs are appraised
- Once an organization achieves a desired level, the tendency is to let the baseline erode
  - Can result in reduced ROI

DoD expects that if you have achieved high maturity, the next program will perform at that maturity

Level-mania
The Solution

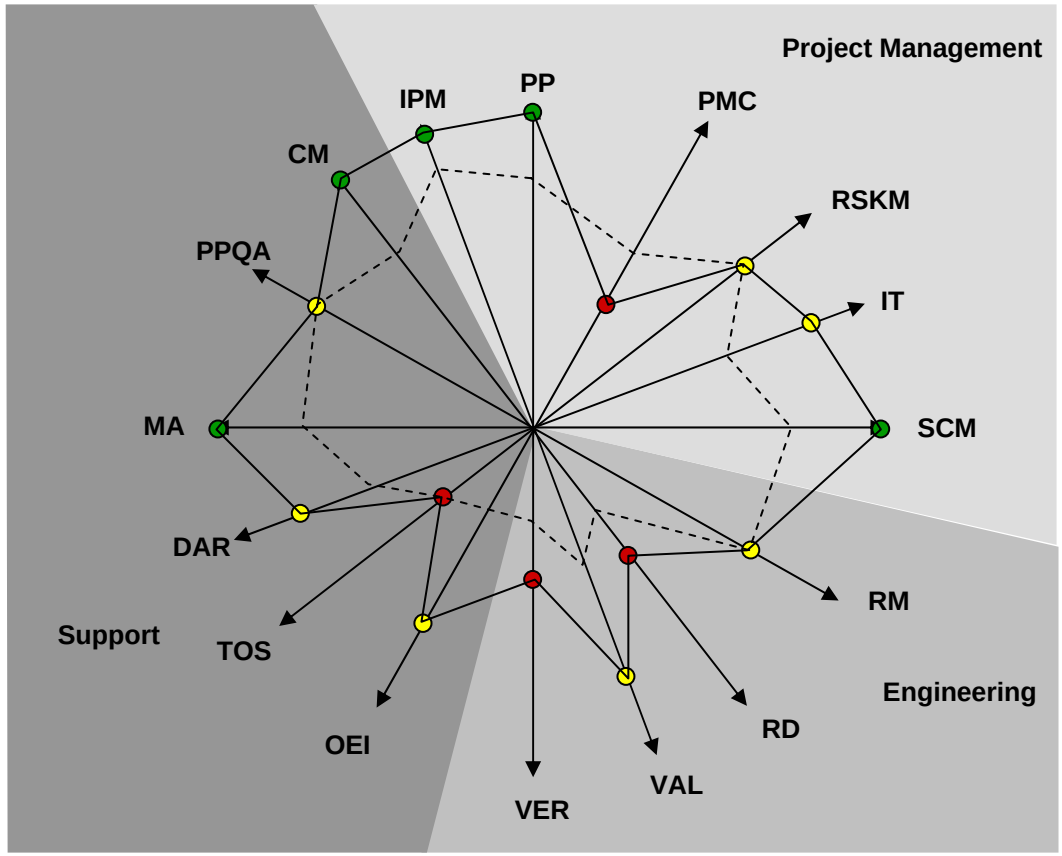
- DoD desires to shift focus from maturity levels to capability profiles
  - Remove the enticement of maturity levels and “one size fits all” syndrome
- Discourage use of maturity levels as selection criteria and replace with targeted CMMI-based risk and capability assessments and profiles
- Develop meaningful measures of process capability based not on a maturity level, e.g. Level 3, but on process performance

Goal is to improve the impact of CMMI on program performance

CMMI Acquisition Module

- New CMMI Acquisition Module (CMMI-AM) should prove valuable in assisting program offices in improving acquisition process
  - Recent pilot efforts indicate positive effect
- Results not expressed as “Levels” but as Capability Profile
- Self-initiated, for internal use
- Will help put program offices on path to acquisition process improvement

Sample Assessment Results



Reinforce the Basics

- Continue focus on refining what CMMI was intended to achieve
  - Do the current process areas and practices allow us to achieve those objectives?
- Make sure that v1.2 changes bring value added to the user
  - Assess the value of each change
- Ensure changes facilitate achievement of the CMMI objectives

What we need from you

- Support the effort to improve CMMI in v1.2
- Bring to bear a plethora of knowledge and lessons learned—gained from the implementation of CMMI

DoD needs even more focus on improvement

- Help to identify systemic issues that plague poor program execution performance, despite high maturity levels

Summary

- CMMI has the potential to do even greater things for development of Systems
- “Continuous Improvement” is just as important for the CMMI product suite as it is for organizations

The Department would like to increase focus on understanding the capabilities of both our organizations and our industry partners, instead of merely achieving maturity levels